

AGRICULTURE MARKING SCHEME

443/1

PAPER 1

June 6th 2017

SECTION A

1 (a) This is the physical relationship between inputs and outputs.

(1mrk)

(b) Types of Production Function;

- Increasing Returns Production Function
- Constant Returns Production Function.
- Decreasing Returns Production Function

($\frac{1}{2} \times 3 = 1 \frac{1}{2}$ mrks)

2 Disadvantages of Shifting cultivation;

- Soil conservation practices cannot be practiced
- Method cannot be practiced in areas with limited land
- Its not suitable for growing perennial crops
- There is low output per unit area
- Lack of long term planning for farm activities
- Lack of use of modern technology

($\frac{1}{2} \times 3 = 1 \frac{1}{2}$ mrks)

3 Types of metal pipes;

- Aluminium pipes
- Galvanized Iron pipes

($\frac{1}{2} \times 2 = 1$ mrk)

4 Factors that determine seed rate;

- Seed purity
- Germination percentage
- Spacing
- Number of seeds per hole
- The purpose/use of the crop

($\frac{1}{2} \times 4 = 2$ mrks)

5 Methods of breaking seed dormancy;

- Mechanical / scarification method
- Heat treatment
- Chemical treatment
- Soaking in water

($\frac{1}{2} \times 3 = 1 \frac{1}{2}$ mrks)

6 ways of improving labour productivity;

- Training the labour force
- Giving incentives to employees
- Efficient supervision of labour
- Proper remuneration of workers
- Mechanization of farm operations
- Provide efficient tools
- Provide transport within the farm

($\frac{1}{2} \times 4 = 2$ mrks)

7 Reasons for treating water;

- To remove bad/odour smell and bad taste
- To kill/remove pathogens or disease causing organisms
- To remove solid particles/impurities
- To remove excess chemicals eg fluorine or soften water

($\frac{1}{2} \times 3 = 1 \frac{1}{2}$ mrks)

8 (a) characteristics of plants for green manure;

- Fast in growth or grow rapidly
- Should be highly vegetative
- High nitrogen content and preferably leguminous plants
- Capable of faster decomposition
- Should be short for ease to plough back into the soil
- Should not be heavy feeders.

($\frac{1}{2} \times 4 = 2$ mrks)

(b) Factors determining quality of Farm Yard manure;

- Type of animal producing the manure
- the quality of food given to the animal
- Type of litter used
- Method of storage
- Age of the animal
- Age of the manure

($\frac{1}{2} \times 4 = 2$ mrks)

9 Forms which water is available in soil;

- Superfluous water
- Hygroscopic water
- Capillary water

($\frac{1}{2} \times 3 = 1 \frac{1}{2}$ mrks)

10 Effects of soil structure on crops;

- Influence the water holding capacity/drainage of water
- Influences soil aeration/facilitates free circulation of air.
- Microbial activities is influenced by soil structure and it is increased if air availability in the soil is increased
- It is not easily eroded.

($\frac{1}{2} \times 4 = 2\text{mrks}$)

11 Aspects of rainfall that influence crops;

- Rainfall reliability
- Rainfall intensity
- Rainfall distribution
- Rainfall amount
- Form of rainfall
- **($\frac{1}{2} \times 4 = 2\text{mrks}$)**
-

12. Biological weed control is the use of living organism, to suppress weeds i.e using sheep to graze in a coffee field (1mk)

13. Reason for mulching

- To reduce evaporation rate
 - To smoothen weeds
 - To moderate soil temperature
 - To reduce speed of surface run off
- ($\frac{1}{2} \times 3 = 1\frac{1}{2}$ mks)**

14 Disadvantage of tractor hire services

- Farmer may not get the services as he needs.
 - Farmers may be overcharged by the tractor owners
 - Farmers have no control over the tractor, hence, may not do a good job/work
- ($\frac{1}{2} \times 3 = 1\frac{1}{2}$ mrks)**

15 Grass help in soil conservation in the following ways;

- Reduce the speed of run-off hence lowering the erosion power of water.
- Reduce the impact of raindrops thus reducing splash erosion.
- Cover the soil protects it from wind erosion
- Grass roots bind the soil particles together reducing the erodibility of soil
- Reduce speed of run – off, thus reducing the erosive power of water
- Organic matter from grass improve soil structure thus reducing erodibility of the soil

($\frac{1}{2} \times 3 = 1\frac{1}{2}$ mks)

16 Disadvantages of communal tenure systems

- No motivation to conserve soil
 - No incentive to make long term inventories
 - An individual cannot use land as security to acquire loans
 - Difficult to control breeding in livestock
- ($\frac{1}{2} \times 2 = 2\text{mks}$)**

17- Roots have fully developed and fertilizers will be fully nutrients.

- this is a stage in which the plant is actively growing vegetatively
- ($\frac{1}{2}$ mks).**

18 Symptoms of blight disease;

- Out of dry brown season of stem, leaves and fruits
 - Affected fruits appear rotten
 - Animals fall off prematurely
- ($1/2 \times 2 = 1$ mks)

- 19 (ii) Sisal – Bulbs , suckers ($1/2$ mk)
(ii) Pyrethrum – splits, crown, ships and suckers. ($1/2$ mk)

SECTION B (20Marks)

20 (a) Aim of the experiment;

- To demonstrate the presence of living organism in the soil. (1mk)

(b)Observation

- C** – Lime water turns white (milky / white precipitate). (1mk)
D – No observable change / lime water remains clear. (1mk)

(c)Lime water in flask C turns water / white precipitate because of CO₂ emitted by living organism which reacts with calcium hydroxide to form white precipitate (calcium carbonate), while

-the heating of the soil killed the soil living organism and no respiration occurred to reduce carbon (IV) oxide.

(2mrk)

(i) Mouse bird (1mk)

(ii) - Seedling beans in early stages.

- Flowers of beans and passion fruits
- Fruits

($1/2 \times 2 = 1$ mk)

(iii) Control of pests;

- Trap and kill it physically.
- Use of explosives at night in areas where they live.
- Shooting to kill.
- Spraying the pests with chemical at night to kill them.
- Use of scare crows to scare them away.

($1 \times 3 = 3$ mrks)

b)

Debit DR(-)	Ksh	Ct s	Credit Cr(+)	Ksh	Ct s
(i)Extra costs Tractor service (cultivation)	1800 x 3 = 5400		Extra Revenue from cotton	150 x 3 = 450 @40/= x	
(ii)Harvesting cotton	@150 x 3 = 450		(i)Yield	450=18000 Sub Total=18,000	
(iii) Revenue forgone	Nil		Costs saved Casual labour	@100 x 40 x3 =12000	
Total	5,850.00		TOTAL	Ksh. 30,000	

(Extra revenue + Costs saved) – (Extra costs + Revenue forgone)
 $30,000 - 5,850 = 24,150/=$

Therefore, this indicates a profit hence the change is worthwhile

(award ½ mk for each item entered correctly, 10 x ½ = 5mrks)

22 (i) Zigzag / Traverse method (1mk)

(ii) **Process of sampling;**

- Clear the vegetation from the sampling spot.
- Make a vertical cut to a depth of 15-25 cm fro crop land and 5 cm deep for pasture field.
- Use soil anger or spade to make a vertical cut to get a slice.
- Put the soil in a clean polythene bag or any other suitable containers.
- Repeat above steps in the different identified spots in the field. At least take soil from 15 – 20 spots.
- Soil from all the spots ate thoroughly mixed, dried and crushed.
- Take a composite sample from the mixture, mix and then package to send to the laboratory for testing.

(1 X 5 = 5 mks) procedure must be followed.

SECTION C (40 Marks)

23(a) **information contained in a receipt;**

- People involved in the transaction / name of buyer and seller or company.
- Date of which payment was made.
- Goods and services for which payment are made.
- The amount of money involved.
- Signature of the person receiving the money.
- A receipt serial numbers

(1 x 5 = 5 mks)

(b) - Transplanting of seedlings;

- Water nursery thoroughly before transplanting
- Dig the planting holes at the appropriate depth
- Only health and vigorously growing seedling are selected.
- Lift the seedlings with a ball/lump of soil attached to the roots using a garden trowel or with the help of a stick uproot the seedlings
- Transport the seedlings carefully to the field using appropriate means i.e a wheelbarrow
- Place insecticide in the hole to control soil borne pests such as nematodes
- Add / tea spoonful of phosphate fertilizers to the planting hole, mix the fertilizers with the soil.
- Add one handful of humus and also mix thoroughly with the soil.
- Transplant and place the seedling in the planting hole at the same depth they were in the nursery.
- Ensure the roots spread well.
- Fill the hole with soil and firm around the base of seedling to the level it was in the nursery.
- The leaves shouldn't not be buried or come in contact with the soil.
- Apply mulch or erect a shade if necessary.
- Water the seedlings thoroughly
- Transplanting should be done on a cloudy day or late in the evening when it is not too hot.

(1 x 5 = 5 mks)

(c) Factors that influence supply of cabbages in a market;

- Number of sellers in the market.
- Prices of related goods i.e kales, spinach, manage etc.
- Price expectation.
- Weather conditions.
- Change in prices.
- Increase in the supply of associated goods i.e kales.
- Cost of production.
- Transportation system.
- Government policy
- Peace and security.

(1 mk for stating and 1 mk for explanation (2 x 5 = 10 mks)

24 (a) Factor that determine spacing in crops;

- The type of machinery to be used.
- Soil fertility.
- The size of the plant.
- Crop stand either pure or mixed.
- Number of seeds per hole.
- Moisture availability
- Use of the crop
- Pest and disease control.

(5 x 2 = 10mks)

(b) Nursery practices carried to seedlings;

- watering
- Mulching
- Weed control
- Pricking out
- shading
- Pest and disease control
- Hardening off

(1 x 6 = 6 mks)

(c) Precautions taken in harvesting tea;

- Plucked tea should be put in woven baskets and not polythene to allow free air movement.
- Pluck two leaves and a bud only because 3-4 leaves colder leaves) lower the quality due to low level of caffeine
- Leaves should not be compressed in the baskets as this can cause them to heat up and turn brown.
- Plucked tea should be kept cool and shaded while plucking continues and awaiting transportation to the factory.
- Plucked tea should be taken to the factory the same day it is harvested.

(1 x 2 = 3mks)

25(a) Ways which farmers overcome risks and uncertainty

Through;

- Diversification
- Selecting move certain enterprises
- Contracting
- Insurance
- Input rationing
- Flexibility in production methods
- Adopting modern methods of production

(1 x 6 = 6 mks)

(b) Advantages of land consolidation

- Proper land supervision
- Farmer get agriculture advice by the field extension officers.
- Should farm planning and adoption of crop rotation programme
- Soil conservation and land improvement.
- Construction of permanent structures i.e fencing.
- Effective weed, pest and disease control
- Economic use of time and saving of transport cost.
- If the land is already registered, it gives the farmer legal ownership and the title deed can be used to secure loans.

(1 x 10 = 10mks)

(c) Advantages of grafting;

- It helps repair damaged parts of trees
- Help shorten the maturing age of some plants such as mangoes and oranges etc
- Facilitate changing of the top of the tree from being undesirable to desirable
- Make it possible to produce more than one type of fruit or flower on the same plant
- Plants with desirable root characteristics, such as disease resistance, vigorous root system e.g. lemon can be used to produce more desirable products.

(1 x 4 = 4marks)